



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/691,461

10/22/2003

Toshihiro Suzuki

1324.68565

7326

24978

7590

02/17/2010

GREER, BURNS & CRAIN
300 S WACKER DR
25TH FLOOR
CHICAGO, IL 60606

EXAMINER

BODDIE, WILLIAM

ART UNIT

PAPER NUMBER

2629

MAIL DATE

DELIVERY MODE

02/17/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/691,461	Applicant(s) SUZUKI ET AL.	
	Examiner WILLIAM L. BODDIE	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. In an amendment dated, November 23rd, 2009, the Applicant amended claim 20. Currently claims 20-25 are pending.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 23rd, 2009 has been entered.

Response to Arguments

3. Applicant's arguments with respect to claims 20-25 have been considered but are not persuasive.
4. On page 6-9 of the Remarks, the Applicants argue that proposed combination of Nakabayashi does not meet the current limitations of the claims.
5. The Examiner respectfully disagrees. It appears that there may be some confusion over the combination that the Examiner has proposed. The combination proposed would keep the general structure and design of the figure 23C embodiment of Nakabayashi. The only difference being the replacement of the two wedge shapes with two adjoining curved shapes. The light sources as contemplated would remain in the same locations and the path of the light would remain the same.

6. As such the combination contemplated would still satisfy limitations requiring light to be internally reflected in an area near the emitting light source and exiting as it approaches the second light source side.

7. Furthermore the general thicknesses of the light guides would likely not change significantly. The generally taper shown in the figure 23c embodiment is seen as maintained in the combination and thus still meets the current claim limitations.

8. As such the rejection is still seen as sufficient and is therefore updated to address the newly added limitations, but is otherwise maintained.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 20-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakabayashi et al. (US 6,379,017) in view of Kuratomi et al. (US 6,791,566).

With respect to claim 20, Nakabayashi discloses, a liquid crystal display device (col. 1, lines 27-31) comprising:

a liquid crystal display panel (col. 4, lines 62-65, for example);

a light source device for illuminating the liquid crystal display panel and having first and second light sources (211, 212 in fig. 23c) and a light guide plate (203 in fig. 23c),

wherein the light guide plate has a planar light exit surface provided in the liquid crystal display panel side (321-322 in fig. 23c), a curved (131 in fig. 14; col. 13, lines 4-6) reflecting surface that is opposite to the light exit surface (311-312 in fig. 23c; 131 in fig. 14) and that is formed so that a thickness of the light guide plate is smaller at both side end faces and becomes greater in a central part thereof (fig. 23c)

the first light source is provided in neighborhood of the one side end face of the light guide plate (side end face of right 203 in fig. 23c); and

the second source is provided in neighborhood of the other side end face of the light guide plate (side end face of left 203 in fig. 23c); and

the curved (131 in fig. 14; col. 13, lines 4-6) reflecting surface is formed so that a light incident from the one side end face is reflected totally on the curved reflecting surface of a neighborhood of the first light source and a light incident from the other side end face is reflected totally on the curved reflecting surface of a neighborhood of the second light source (col. 22, lines 21-37; discloses, that the top plate 311-312 reflects the light to be output at the bottom faces 321-322).

As described above, the figure 23c grooves in figure 23c are seen as replaceable with the figure 14 curved reflecting surface. This replacement is seen as both suggested (increased uniform illumination; col. 13, lines 10-15) and likely to be successful due to the very similar manner of operation between the two embodiments.

Nakabayashi does not expressly disclose a driving circuit nor a light scattering element formed on the reflecting surface.

Kuratomi discloses a liquid crystal display device (fig. 32) comprising:

a driving circuit (1903 in fig. 32) for supplying a predetermined drive signal to the liquid crystal display panel (1901 in fig. 32), and

a light scattering element formed on the reflecting surface (16 in figs. 2-3), and

a light source device for illuminating a liquid crystal display panel from a back side thereof (fig. 32).

Nakabayashi and Kuratomi are analogous art because they are both from the same field of endeavor namely backlight design for LCDs.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the driving circuit and light scattering layer of Kuratomi in the display of Nakabayashi for the benefit of producing the necessary signals to display ordinary NTSC signals on the display (Kuratomi; col. 2, lines 18-23).

With respect to claim 21, Nakabayashi and Kuratomi disclose a liquid crystal display device according to claim 20 (see above).

Nakabayashi does not expressly disclose the light-scattering element is formed by using screen printing.

Kuratomi discloses wherein a light-scattering element has a scattering layer (16 in figs. 2-3) formed by using screen printing (col. 8, lines 60-65).

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the create the light-scattering element of Kuratomi via the screen printing method taught by Kuratomi for the benefit of producing a desired luminance gradient (Kuratomi; col. 9, lines 1-3).

With respect to claims 22-23, Nakabayashi and Kuratomi disclose a liquid crystal display device according to claims 20 and 21 (see above).

Nakabayashi further discloses, wherein the light guide plate has a first lighting element for taking out light guided from the side of the first light source and which includes the light-scattering element (311 in fig. 23c) and a second lighting element for taking out light guided from the side of the second light source and which includes the light-scattering element (312 in fig. 23c);

the first lighting element is provided in an area other than the neighborhood of the first light source (211 in fig. 23c) and takes out light guided from the side of the first light source with higher efficiency as the distance to the second light source is smaller (col. 22, lines 21-37; discloses, that the top plate 311-312 reflects the light to be output at the bottom faces 321-322); and

the second lighting element (212 in fig. 23c) is provided in an area other than the neighborhood of the second light source and takes out light guided from the side of the second light source with higher efficiency as the distance to the first light source is smaller (col. 22, lines 21-37; discloses, that the top plate 311-312 reflects the light to be output at the bottom faces 321-322).

With respect to claim 24, Nakabayashi discloses, a liquid crystal display device (col. 1, lines 27-31) comprising:

a liquid crystal display panel (col. 4, lines 62-65, for example);

a light source device for illuminating the liquid crystal display panel and having first and second light sources (211, 212 in fig. 23c) and a light guide plate (203 in fig. 23c),

wherein the light guide plate has a planar light exit surface provided in the liquid crystal display panel side (321-322 in fig. 23c), a wedge-like (each 203 in fig. 23c is seen as encompassing the broadest reasonable interpretation of “wedge-like”) reflecting surface that is opposite to the light exit surface (311-312 in fig. 23c; 131 in fig. 14) and formed so that thickness of the light guide plate is smaller at both end faces and becomes greater in a central part thereof (fig. 23c), the reflecting surface being planar from each end faces to the central part (fig. 23c) and having prism-like features formed on the reflecting surface at predetermined angles (204 in fig. 23c)

the first light source is provided in neighborhood of the one side end face of the light guide plate (side end face of right 203 in fig. 23c); and

the second source is provided in neighborhood of the other side end face of the light guide plate (side end face of left 203 in fig. 23c).

Nakabayashi does not expressly disclose a driving circuit.

Kuratomi discloses a liquid crystal display device (fig. 32) comprising:

a driving circuit (1903 in fig. 32) for supplying a predetermined drive signal to the liquid crystal display panel (1901 in fig. 32), and

a light scattering element formed on the reflecting surface (16 in figs. 2-3), and

a light source device for illuminating a liquid crystal display panel from a back side thereof (fig. 32).

Nakabayashi and Kuratomi are analogous art because they are both from the same field of endeavor namely backlight design for LCDs.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the driving circuit Kuratomi in the display of Nakabayashi for the benefit of producing the necessary signals to display ordinary NTSC signals on the display (Kuratomi; col. 2, lines 18-23).

With respect to claim 25, Nakabayashi discloses, a liquid crystal display device (col. 1, lines 27-31) comprising:

a liquid crystal display panel (col. 4, lines 62-65, for example);

a light source device for illuminating the liquid crystal display panel and having first and second light sources (211, 212 in fig. 23c) and a light guide plate (203 in fig. 23c),

wherein the light guide plate has a planar light exit surface provided in the liquid crystal display panel side (321-322 in fig. 23c), a wedge-like (each 203 in fig. 23c is seen as encompassing the broadest reasonable interpretation of "wedge-like") reflecting surface that is opposite to the light exit surface (311-312 in fig. 23c; 131 in fig. 14) and that is formed so that thickness of the light guide plate is smaller at both end faces and becomes greater in a central part thereof (fig. 23c), the reflecting surface being planar from each end faces to the central part (fig. 23c)

the first light source is provided in neighborhood of the one side end face of the light guide plate (side end face of right 203 in fig. 23c); and

the second source is provided in neighborhood of the other side end face of the light guide plate (side end face of left 203 in fig. 23c).

Nakabayashi does not expressly disclose a driving circuit nor a light scattering element formed on the reflecting surface.

Kuratomi discloses a liquid crystal display device (fig. 32) comprising:

a driving circuit (1903 in fig. 32) for supplying a predetermined drive signal to the liquid crystal display panel (1901 in fig. 32), and

a light scattering element formed on the reflecting surface (16 in figs. 2-3), and

a light source device for illuminating a liquid crystal display panel from a back side thereof (fig. 32).

Nakabayashi and Kuratomi are analogous art because they are both from the same field of endeavor namely backlight design for LCDs.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the driving circuit and light scattering layer of Kuratomi in the display of Nakabayashi for the benefit of producing the necessary signals to display ordinary NTSC signals on the display (Kuratomi; col. 2, lines 18-23).

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to WILLIAM L. BODDIE whose telephone number is (571)272-0666. The examiner can normally be reached on Monday through Friday, 7:30 - 4:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/William L Boddie/
Examiner, Art Unit 2629
2/18/2010